

THE ANNALS

AND

MAGAZINE OF NATURAL HISTORY.

[SEVENTH SERIES.]

No. 82. OCTOBER 1904.

XXXVII. — *Observations on Coleoptera of the Family Buprestidæ, with Descriptions of new Species.* By CHAS. O. WATERHOUSE, F.E.S.

WHILE incorporating the valuable collection of Buprestidæ recently acquired by the British Museum from Capt. Ch. Kerremans many facts have come under my notice which, I think, will be of interest to those studying this family, and which I therefore here record. I have also described several species which appear to be new.

Buprestidæ.

Sternocera æquisignata and *aurosignata*.

These two species (the former from Siam, the latter from India) are very difficult to distinguish from above, but are easily recognized from below by the position of the triangular, finely punctured, and generally pubescent spots on the last segment of the abdomen; *S. æquisignata* has these spots close to the margin, *S. aurosignata* has them removed from the margin.

S. sternicornis is usually easily known by the numerous white pubescent spots on the elytra. The underside of the abdomen is rather closely marked with large, shallow, finely

punctured and pubescent spots, but there are no triangular patches on the last segment as in *æquisignata* and *aurosignata*.

Sternocera sternicornis, var. *linearis*, Kerr.

This species has no spots on the elytra, but the underside of the abdomen agrees with *sternicornis*.

Sternocera multipunctata, Saund.

Cochin China. This species has numerous white spots on the elytra, as in *sternicornis*; but it has the abdomen almost as smooth as in *æquisignata*, and it has the triangular spots at the *side* of the last segment as in *æquisignata*. I have seen only two specimens of this insect.

Sternocera punctatofoveata, Saund.

Siam. This species has the form and punctuation above of *æquisignata*, but there are traces of lines of spots on the elytra. The abdomen is smooth and has the triangular spots on the last segment at the sides, as in *æquisignata*. A specimen from Capt. Kerremans' collection has the spots rather more distinct than in the type.

Sternocera ruficornis, Saund.

Siam. This species resembles *aurosignata*, but is shorter and more regularly ovate. It is of a rich steel-blue, with reddish antennæ and legs. The abdomen is very shining, bright green, with the sutures marked by copper. The triangular pubescent spots on the last segment are very large, almost meeting in the middle of the segment, of a reddish-golden colour. The pubescence on the two preceding segments is much more extended than is usual in *aurosignata*.

I have seen only the type specimen.

In Capt. Kerremans' collection there are two specimens labelled *ruficornis*, but they are very unlike the type specimen of that species. They are of a bright golden-green colour, and the elytra are sculptured nearly as in *sternicornis*. The thorax has the sides very slightly rounded, almost rectilinear, and it is much narrowed in front; the elytra are very acuminate. The underside agrees very well with *ruficornis*. The legs are of a reddish colour.

Sternocera Kerremansi, Kerr.

Siam. This species is of a bright green colour and is certainly the same as the two specimens just referred to above, differing only in having traces of pubescent foveæ on the elytra.

These three specimens may prove to be extreme forms of *ruficornis*, but I have not seen specimens intermediate between them and the typical *ruficornis*.

The colour of the underside and the non-metallic legs suggest affinity with *S. dasypleura* rather than with *S. æquesignata*.

Sternocera Druryi, sp. n.

Statura *S. castaneæ*, nigra, nitida; antennis, elytris pedibusque castaneo-flavis.

Long. 22 lin.

Hab. Upper Nile (*W. B. Drury, R.N.*); Gadarif, Sudan (*Dr. Hayes*).

This species is close to *S. castaneæ*, but differs in having antennæ, legs, and elytra (especially the elytra) much more yellow. The thorax and underside are jet-black, not the least bronzy. The thorax strongly sculptured with elongate foveæ and confluent rugæ, as in *castaneæ*, but there is much less pubescence in the foveæ. The elytra are without pubescent spots, except the one at the base, which is very inconspicuous. The legs are brownish yellow, with the posterior margin of the femora black.

A specimen of this species without locality has been in the Museum for many years associated with *S. castaneæ*. Recently a specimen was received from the Upper Nile, and there are two fine specimens from Sudan in the Oxford Museum.

Sternocera Stevensii, sp. n.

Resembles and is closely allied to *S. interrupta*, but differs in the sculpture and ornamentation of the abdomen.

Head and thorax black, with numerous moderately strong punctures and a median impressed line, all filled with whitish pubescence, as in *interrupta*. Elytra castaneous, rather more strongly punctured than in *interrupta*. Each elytron with a small dirty white spot near the scutellum, an elongate spot in the middle of the base, a longer one below the shoulder, and a line behind the middle (near the side).

Body beneath dark æneous. The abdomen is marked with punctures, each puncture bearing an obscurely brassy hair. These punctures are placed in groups of two or three or in undulating lines at the sides of the segments. On the third and fourth segments these punctures are crowded together so as to form an undulating band, leaving a smooth shining spot on each side at the base, and a wide, triangular, sparingly punctured area in the middle. The punctures on the apical segment are crowded together so as to form triangular patches on each side, leaving the middle space sparingly punctured.

Long. 17 lin.

Hab. W. Africa.

Variety A.—Elytra dark castaneous, nearly black.

Hab. N. Nigeria (*Capt. Lelean*).

Variety B.—Thorax brassy. Elytra very dark brown, with blue reflections.

Hab. Damara Land.

Sternocera Zechiana, Kolbe.

Sternocera Zechiana, Kolbe, Ent. Nacht. xxiii. 1897, p. 351.

In the Museum there are several specimens from Togo and Upper Niger which appear to be referable to this species. The dark spot described on the shoulder of the elytra is, however, so very indistinct, and, on the other hand, the pubescent spots on the abdomen, described as “flavidotomentosa indistincta,” are so very well marked, that it is just possible they may be a different species. The thorax is dark bluish æneous, with golden punctures. The elytra are brown, with the suture and margin very narrowly margined with brassy black. The underside of the insect is bright golden æneous, with blue or copper tints on the abdomen. One example is dark bluish beneath. The abdomen is moderately strongly punctured, each puncture bearing one, two, or three yellow hairs: these are arranged in a line along the apical margin; others are placed irregularly not very close together in the middle of the segment, but at the base on each side they are fine and crowded together so as to form very wide triangular patches on the third and fourth segments. The apical segment has two equilateral triangular patches of yellow pubescence.

The chief differences between this species and *S. Stevensii* are that this has no pubescent spots on the elytra; and the pubescence on the abdomen, which in *Stevensii* covers the greater part of the sides of the segments, extending to the

posterior margin (but leaving a *bare spot* at the basal margin), in this species is more confined to the basal part of the segment and leaves no bare spot at the base.

This species forms an interesting passage from *S. Stevensii* to *S. Colmanti*, Kerr. In this latter, which is of a brassy colour above as well as below, the abdomen has the pubescence arranged nearly as in *Stevensii*, but it is much less dense and the pubescent spots are very vague.

In *S. Duvivieri*, Kerr., which has the underside coloured much as in *S. Zechiana*, the pubescence on the abdomen is longer, more sparse, and does not form spots at all. The elytra in some specimens show *very* slight traces of the elongate spots as in the *interrupta* group.

S. mephisto, a smooth shining insect, has the pubescence on the abdomen as in *S. Stevensii*—*i. e.*, with four smooth spots surrounded by fine pubescence on the third and fourth segments.

Acherusa Saundersii, sp. n.

Very dark cyaneous, with the sides of the thorax and the whole underside clothed with ashy pubescence. Elytra with the basal area coppery, with purple and brassy shades; this colour is extended posteriorly more on the fifth, sixth, and seventh interstices.

Long. 10 mm.

Hab. Brazil.

This species presents nothing unusual in its form. It is close to *A. piliventris*, Saund., but differs in the granulation of the thorax and in the colour of the elytra. The thorax is dark steel-blue. The punctuation is distinct and not very fine, the punctures separated from each other by about two diameters of a puncture. On the disk the punctures are replaced by round distinctly raised granules. In *A. piliventris* the punctuation is much finer, slightly asperate, and there is an indication of transverse striolation. The elytra are as in *A. piliventris* (not impressed at the apex as in *A. Childrenii* and *Parryi*), and the third, fourth, and fifth costæ remain parallel as in *A. piliventris* (not turned towards the side as in *A. Childrenii* and *Parryi*). The coppery colour occupies all the basal area, but extends posteriorly more towards the sides, especially on the fifth, sixth, and seventh costæ.

Paracastalia longipennis, sp. n.

Dark cyaneous, with green tint. Thorax strongly and

very closely punctured. Elytra reddish brown, with cyaneous tint on the costæ.

Long. 14 mm.

Hab. Nyassa (*Theilwall*).

Very close to *P. plagiata*, Kerr., but narrower. Thorax strongly and densely punctured, the punctures less close on the disk. The lateral carina (viewed from the side) with an arcuate sinus at the base, then continued straight to the anterior sternal notch, rendered crenulate by the coarse punctuation, and obliterated anteriorly. In *P. plagiata* this carina is bisinuate or undulating and is smooth. Elytra uniform reddish brown, each with four strong costæ, the first of which extends to only half the length of the elytra. The apex acutely denticulate.

At first I thought this might be only a colour variety of *P. plagiata*, but the lateral carina of the thorax is so different that I think it must be a distinct species.

Paracastalia Duvivieri, Kerr.

The type specimen of this species has several very small pale yellow spots on the elytra. In the British Museum collection there are two specimens, one from Nyassa, the other from Zambesi, which differ from the type in having somewhat large orange-yellow spots, arranged thus:—a large spot surrounding the humeral callus, one near the suture before the middle, a very small one on the margin below the shoulder, a quadrangular transverse spot about the middle, an undulating fascia a short distance from the apex, and a small spot at the apex.

Neither of these specimens has the median line on the throat so marked as in the type. They may be a distinct species, but the material at disposal does not at present justify their separation.

Paracastalia Bettoni, sp. n.

Elongate, parallel, dark bluish æneous. Elytra dull red, each with nine or ten nearly equally raised convex costæ, the first of which extends only to the middle.

Long. 14 mm.

Hab. Samburu, Brit. E. Africa (*C. Stuart Betton*).

The species of this genus hitherto described are peculiar for the fact that each elytron has four well-marked costæ separated by channels. The first and second channels unite at the middle, behind the first costa, and from this point to the apex there is a single costa. In *P. Bettoni* all these

channels are represented by costæ, so that each elytron has eight or nine dorsal costæ (the first abbreviated), separated by lines of transverse punctures, the costæ themselves finely punctured. The thorax has a slight indication of a dorsal channel in front and at the base. The punctuation on the disk is not very strong and the punctures are slightly separated, but towards the sides they are stronger and close together.

A species of the Heteromerous genus *Praogena* received with this species has similar coloration.

Paracastalia variegata, sp. n.

Elongate, blackish æneous; the elytra with a number of small, irregular, reddish-yellow spots.

Long. 16 mm.

Hab. Port Natal.

Thorax very slightly broader than the elytra, somewhat narrowed in front, arcuately rounded at the sides, strongly and very densely punctured, somewhat rugose. The disk lightly impressed, with a slight median impressed line at the base. Slightly pubescent, with obscure yellow spots; a double spot on the disk, with a minute one in front; a very small one between the central one and the side, and two rather larger ones on the side, one near the front angle, the other at the middle. The elytra are very long. The first costa (after the suture) is short, stopping considerably before the middle; the second is scarcely convex, except posteriorly; the third is cariniform; the fourth scarcely convex; the fifth and seventh convex and distinct; the sixth only slightly convex. Each elytron has a large number of yellow spots, five of which form a small band at a short distance from the apex. The apex arcuate, with numerous acute equal teeth. The underside of the insect is clothed with short greyish pubescence. The sternal process is more acute than in allied species. The lateral ridge of the thorax is only represented by a slight sinus at the base.

The costation of the elytra in this species is intermediate between *Duvivieri* &c. and *Bettoni*, but the lateral expansion of the elytra is rather less strong. It differs from all the other species in being pubescent below.

CASTALIA.

There has been much confusion in this genus owing to the differences in the sexes; and it is regrettable, after these differences had been pointed out by Dr. Heller (Deutsch. ent. Zeit. 1891, p. 135) to be sexual, that Capt. Kerremans

has again confused them. I have examined Capt. Kerremans' examples, and he has fallen into an error in supposing that he had both sexes with acuminate apex to the abdomen. The synonymy as given by Dr. Heller is quite correct, except that *C. auromaculata*, Saund., is quite distinct from *bimaculata*, L., and I think *C. cyanipennis* is also a distinct species.

Castalia pulchra, sp. n.

Somewhat the build of *C. bimaculata*, L., but relatively shorter and broader, of a beautiful violet-blue. Thorax very broad, strongly punctured, the punctures on the disk crowded together, not quite so close at the sides; the sides much rounded, widest near the base, slightly tinted with green. Basal fovea very deep. Elytra much shorter than in *C. bimaculata*, dark violet-blue, a little paler at the apex, tinted with green at the basal margin; with an obscure, oblique, reddish-yellow, ill-defined spot behind the middle; strongly and very densely punctured; each elytron with four well-marked smooth costæ, the first only reaching to the middle. The apex dentienlate. Lateral carina of the thorax (viewed from the side) slightly bisinuous, the surface within this carina not so deeply impressed as in *C. bimaculata*. Abdomen dark steel-blue, shining, the segments bordered with violet; very strongly punctured, the punctures generally separated from each other by less than a diameter of a puncture, but at the sides they are closer and touch each other.

Long. 18 mm.

Hab. India.

Castalia auromaculata, Saund.

The type of this species is a much shorter insect than *C. bimaculata*; the thorax is shaded with violet on the disk, with golden and copper at the sides. The under flanks of thorax and sides of the basal segment of the abdomen are purple-coppery. The abdomen is somewhat golden, with the segments bordered with steel-blue. The elytra are dark green, with the costæ somewhat brighter; the intervals with punctures, which are not very close together and are arranged in lines.

The type is a female.

A male example from Capt. Kerremans' collection, labelled "Tonkin, Fairmaire," agrees exactly in form and sculpture with the type; but the colours of the thorax are more obscure and the elytra dark violet.

Castalia Fairmairei, sp. n.

Very similar to *C. auromaculata*, but more elongate. Bluish green, with slight brassy tint. Thorax convex, densely punctured as in *auromaculata*, the punctures at the sides very slightly separated. The sides rather strongly rounded. The disk tinted with blue; the sides with brassy. Elytra rather strongly, closely, and irregularly punctured, the punctures not forming lines. Body beneath brassy, the under flanks of the thorax and base of abdomen tinted with coppery.

Long. 21 mm.

Hab. Tonkin (coll. Kerremans, ex Fairmaire).

I have been in much doubt as to this insect being distinct from *C. auromaculata*. There were four examples in Capt. Kerremans' collection, all labelled "Tonkin, Fairmaire," one male and three females. The male differs from the females in being shorter; it has the thorax almost parallel at the sides behind the middle. The elytra are comparatively sparingly punctured and the punctures are in lines. In these respects it agrees exactly with the type of *auromaculata*. The females, to which I have now given the name *C. Fairmairei*, are much longer, have the sides of the thorax strongly rounded and the elytra densely and irregularly punctured.

I at first thought that these differences might be sexual, but the dissection of the type of *auromaculata* proved it unquestionably to be a female. Under these circumstances I have placed the male from Tonkin with *auromaculata*, and regard the three females from Tonkin as those of a distinct species.

Castalia Bettoni, sp. n.

General form of *C. bimaculata*, L., but a little broader. Head, thorax, and body beneath æneous; elytra obscure violet, with an indistinct ferruginous spot near the side before the middle. Thorax very broad, moderately strongly punctured, the punctures more sharply defined than in *bimaculata*, separated from each other on the disk by about the diameter of a puncture, a little closer together at the posterior angles; at the front angles (where the surface is slightly impressed and brassy) the punctures are finer and crowded together. The disk has an impressed Y-shaped mark. The punctuation of the elytra is very distinct. In the intervals between the costæ the punctures are generally slightly separated from each other, but at the apex and sides they are more crowded together. [The specimen described

has the second costa furcate at the apex, but this is probably an individual character.] The abdomen is moderately strongly punctured, the punctures not crowded; æneous, with coppery shade, the extreme margins of the segments steel-blue. The femora are dark bluish green; the tibiæ violet.

Long. 21 lin.

Hab. Samburu, Brit. E. Africa (*C. Steuart Betton*).

POLYCESTA.

By the kindness of M. Oberthür I have been able to examine all the types of Gory, Thomson, &c. in his collection. Unfortunately some of the labels had manifestly been put on the wrong specimens before they came into M. Oberthür's possession. I hope the following notes will be useful in elucidating the synonymy, but until more specimens from exact localities are available much doubt must still attach to the names of several species.

Polycesta cyanipes, Fabr.

The type of this species is in the Hunterian Collection in the University of Glasgow. It is *P. resplendens*, Th., from Jamaica. Specimens labelled *cyanipes*, F., from Capt. Kerremans' collection are the true *depressa*, Linn.

Polycesta costata, Sol.

Polycesta costata, Sol., Gay's Hist. Chile, iv. p. 491 (1854).

Mr. Saunders, in his Catalogue, places this next to *carnifex*. Capt. Kerremans does not mention it. From description it appears to me to be an unspotted variety of *carnifex*. If this surmise is correct the name *costata* will have priority.

Polycesta porcata, Fabr.

The species for which this name is being retained in the Museum is one of the broadest species of the genus, brownish coppery, with dark green tint on the costæ, with most coarsely pitted elytra. Apparently common in St. Domingo.

Polycesta thomæ, Chevr.

The type of this species is in the Museum. It resembles the preceding, but the punctures or pits on the elytra are rather smaller, rather more regular, and consequently the costæ are more evident.

It is not the same as *P. Goryi*, Saund., as given by Capt. Kerremans in Wytsman's 'Genera.'

Polycesta depressa, Linn.

The type of this species is in the Linnean collection at the Linnean Society of London. The thorax is dark metallic green shaded with coppery, very acutely angulated at the sides behind the middle, the disk with a large, shallow, strongly punctured impression. The elytra are brownish coppery, with the sutural area and lateral costæ green and shining.

Polycesta karakara, Chevr.

The type of this species is in the Museum. Mr. Saunders in his Catalogue considered this a variety of *depressa*, but I am inclined to give it specific rank. It is a much more brilliant insect, more elongate, with the elytra more acuminate; the punctuation of the elytra is coarser and rather less regular.

Polycesta porcata, Lap., nec Fabr.

This species is described from Guadeloupe. The figure represents it as a brightly coloured insect; the abdomen is said to be blue.

In M. Oberthür's collection there is a specimen labelled Guadeloupe from Laporte's collection which has the abdomen bright blue. It is the only specimen that I have ever seen with a blue abdomen, and I suggest that it is almost certainly the specimen described by Laporte as *porcata*. It is a colour variety of *karakara*. The specimens in M. Oberthür's collection labelled *P. porcata*, L. & G., type, are, from the locality-labels and description, evidently not the species described by Laporte; they are *P. depressa*, L.

Polycesta depressa, Oliv., nec Linn.= *Olivieri*, n. n.

This species is said to be in the British Museum, and there is in the Museum a very old specimen bearing the name *depressa* which I believe is certainly that mentioned by Olivier. It is a broad insect, very flat dorsally, of a somewhat dull brownish coppery, with obscure green in parts. It has all the costæ of the elytra well marked, *i. e.* each elytron has six dorsal costæ, the second and fourth only slightly more elevated than the others.

The old specimens in the Museum are without locality, but recent examples in the Museum and in M. Oberthür's collection are from Jamaica.

Polycesta depressa, L. & G., nec Linn.

Mr. Saunders in his Catalogue proposed the name *Goryi* for this species.

The specimen marked "*cribrata*, Th., type" in M. Oberthür's collection, are the same species; *P. Goryi* has priority.

Polycesta alternans, sp. n.

Elongate, slightly and evenly convex; purple-coppery, with green intermixed. Thorax broader than the elytra, somewhat flattened dorsally, broadest behind the middle, obliquely narrowed in front; strongly punctured, the punctures slightly separated on the disk, crowded at the sides, with a smooth median line: base with a transverse, dull black, smooth band; basal fovea distinct, but not large. Elytra with the costæ subequal, alternately green and coppery, the first extending only to the middle, the third and fifth only slightly more prominent than the others; the intervals rather strongly, closely, and irregularly punctured, especially at the sides and apex; near the scutellum the punctures are finer and less close. Tibiæ and tarsi blackish. Underside coppery, with green intermixed, the green forming a narrow band near the posterior margins of second, third, and fourth segments, the margins themselves black. Prosternum finely punctured, the punctures not close together. The middle of the basal segment of the abdomen is similarly punctured, but the punctures are rather stronger and a little closer on the following segments, and the apical segment is closely punctured; the punctuation at the sides is fine and very dense.

Long. 26 mm.

Hab. Pinos Altos, Chihuahua, Mexico (*Buchan-Hepburn*).

A single example from Messrs. Godman and Salvin's collection, received too late for inclusion in the 'Biologia.'

The nearest allied species in the Museum is named *cribrana*, Mots., which must not be confounded with *cribrata*, Mots.

Polycesta regularis, sp. n.

Oblong, parallel, much flattened, only a little more than twice as long as broad, nearly black, but with a slight cyaneous tint below. Elytra ferruginous. Thorax not quite twice as broad as long, black, dull, broadest behind the middle, strongly angular at the sides, obliquely narrowed in front and behind; the space from the lateral angle to the

base rectilinear. The punctuation strong and sharp; the punctures in the discoidal impression (which is very shallow and ill-defined) moderately large and very slightly separated, at the sides they are smaller and crowded together. There are two small spaces at the base which have only a few punctures. The elytra are rusty brown, the margin and costæ blackish. There are four smooth costæ, the first abbreviated before the middle, the second and third well marked, the fourth fine and abbreviated at the base and apex. The double lines of foveæ between the suture and the second costa and the second and third costæ are regular and the foveæ are subquadrate. The foveæ which form the more lateral lines are regular, but a little less quadrate. Viewed beneath, the lateral ridge of the thorax is very sharp. The whole underside is clothed with fine grey pubescence. The abdomen is very distinctly and rather closely punctured. There is an oval, brown, pubescent spot on the basal segment.

Long. 14 mm.

Hab. St. Domingo [or possibly Dominica].

This species is very close to *P. Chevrolati*, but is smaller, and the lines of punctures on the elytra are very regular.

A single specimen from an old collection, with the locality indistinctly written.

Polycesta Gossei, sp. n.

Elongate-oblong, much flattened, green; elytra ferruginous, shaded with green at the suture. Thorax at the widest scarcely wider than the elytra, only slightly angular at the sides, obliquely narrowed in front, very slightly narrowed posteriorly; green, shaded with purple-coppery at the base. Disk lightly impressed; the punctures rather coarse, very close, and rather confused, rather smaller at the sides, with two spots at the base which have only a few punctures. Elytra subparallel, with a not very distinct costa near the scutellum extending about a quarter the length of the elytra. There are two other very distinct smooth costæ. The foveæ which form the double lines are very regular and somewhat round. Beyond the second complete costa there are four rows of regular somewhat round foveæ or large punctures. The underside is a beautiful bluish green, the legs, parts of the sterna, and margins of the segments shaded with purple. Tarsi cyaneous. The abdomen has some fine greyish pubescence, and on the basal segment there is a brown velvety spot.

Long. 11 mm.

Hab. Jamaica (*Gosse*).

This species is very near *P. velasco*, L. & G., but that has a rather more angulated thorax, &c. It is possible that *velasco* and *montezuma*, L. & G., may be sexes of the same species, but there is not material at hand to enable me to decide.

Polycesta variegata, sp. n.

Elongate, brownish coppery, slightly shining, gently convex. Thorax obtusely angular at the sides, broadest just behind the middle, obliquely narrowed in front and towards the base, the lateral angle rounded, the posterior angles very slightly projecting and acute. Disk with a distinct but shallow longitudinal impression, narrow in front, broader at the base. The punctures on the disk are moderately strong, not close together; at the sides they are smaller, crowded together, leaving a few irregular raised lines. Base smooth in the middle, blackish. Elytra gently convex, variegated with æneous black spots and marks, each elytron with a fine costa next the suture, extending nearly to the apex; the second and fourth costæ very distinct, wide at the base, becoming gradually narrower to the apex; the third costa is represented by a slightly raised line in the basal part of the interval between the second and fourth costæ. There are lines of moderately strong punctures, not very equal in size and mixed with much smaller ones. The spines at the apex are rather strong and acute. The punctures on the middle of the abdomen are moderately strong, not very close together, horseshoe-shaped; at the sides the punctuation is close and rugose; the apical segment is closely punctured and has a fine raised median line at the apex.

Long. 17 mm.

Hab. Mexico (*Höge*); from the Godman and Salvin collection.

In general appearance this species much resembles *P. tonkinea*, Fairm., but that has the thorax less angular at the sides, and the first costa of the elytra is abbreviated and thick, in this species it is fine and complete.

Acmæodera luzonica, Nonfr.

Acmæodera luzonica, Nonfr., Berl. ent. Zeit. xl. p. 302.

Herr Nonfried describes this species as bronzy green. All the British Museum specimens from Luzon &c. which appear to belong to this species are nearly black, a single example from Siam being somewhat purple-violet. It is confounded in most collections with *A. stictipennis*, L. & G.,

which is a deep steel-blue insect. Apart from the colour, this species differs from *stictipennis* in the lateral yellow stripe of the elytra. In the Indian *stictipennis* the yellow stripe is at the base single for a short distance, and is then double (*i. e.* occupies two interstices) until it reaches the transverse postmedian spot. In *luzonica* the yellow on the submarginal interstice stops halfway between the shoulder and the transverse spot, so that the yellow stripe occupies only one interstice at the middle.

Acmæodera grandis.

The species of this group differ so much in the colour of the sexes that the males have in most cases been described as distinct from the females.

The males are generally dark-coloured, bronzy or coppery, the females bright metallic green or blue.

A. grandis, Guérin, is a female; *cuprina*, Fähr., is the male of the same species in all probability, but I notice that the male *cuprina* in the Museum collection from N'Gami shows a slight tendency to carination at the apex of the elytra, which I do not see in the specimens from Abyssinia received with the female *grandis*. I believe, however, that they are all one species.

Acmæodera viridiænea, De Geer.

A. viridiænea, De Geer (Mém. vii. p. 631), is a female and *A. æneicollis*, De Geer (p. 632), is the male of the same species. *A. violacea*, Gory, is a female, and I believe *A. gibbosa*, Oliv., also a female, is the same.

Acmæodera subalveolata, Th.

A. chrysoloma, Th., is the male of *A. subalveolata*, Th. By the kindness of M. Oberthür I have been able to examine the types of these species. Both are described on p. 61 of the 'Typi Buprestidarum,' *subalveolata* being described first.

Acmæodera puella, Bohem.

A. puella, Bohem. (Cefv. K. Vet.-Akad. Förhandl. for 1831, p. 12), is a female, and *A. luculenta*, described on the next page, is probably the male.

Acmæodera repercussa, L. & G.

This is a male. The species of this group are extremely difficult to determine, and at present there is only one male

in the Museum collection that agrees well with the type of *repercussa*. The specimens labelled *repercussa* in Capt. Kerremans' collection are males of *A. viridis*, Kerr. They differ from the type in M. Oberthür's collection in not having the sutural striæ impressed, but striato-punctate.

A. aurolimbata, Bohem., is a male, and, according to a specimen from N'Gami labelled "compared with type" by Mr. Saunders, is very close to *repercussa*, but is rather less convex and has the dorsal area æneous green; the disk of the thorax is rather closely and somewhat strongly punctured. The suture and first and second interstices of the elytra smooth at the extreme base only. The sides are densely punctured, but not transversely rugulose.

The colour of the elytra, according to description, should be cyaneous.

A female received from N'Gami with the above-mentioned male is green, and, as is usually the case, is less punctured on the elytra, the sutural interstices being smooth for half their length.

I am inclined to believe that *aurolimbata* may be only a variety of *repercussa*, of which *viridis* is the female. *A. fossicollis*, Harold, may also perhaps be female of the same.

A. gabonensis, Th., is a female. I could not find any specimen in the Museum to agree quite with the type. The type has the thorax rather narrower than is usual in *viridis*, the disk is finely punctured, and the median furrow less marked. It may be an extreme variety.

Acmæodera posticalis, L. & G.

A. posticalis, L. & G., the type of which, by the kindness of M. Oberthür, I had the opportunity of examining, is a female. It resembles a small *A. viridiænea*, but is, I think, nearer *A. viridis*, Kerr., the elytra having the interstices carinulate at the apex. A specimen in the Museum is entirely violet. In the type the violet colour and green shades are irregular and, I should imagine, not natural.

It may be an extreme variety of *viridis*.

Acmæodera fascigera, Harold.

The sexual differences are not so striking, but the males have the base of the elytra very dark.

Acmæodera Klugii, Saund.

The sexes of this species are alike.

Acmæodera aurifera, L. & G.

This is a female. Capt. Kerremans has described the male as *A. scintillans*.

Acmæodera Saundersii, sp. n.

Bright golden green, shining, the head and the suture of the elytra having a blue tint in certain lights. Underside dark steel-blue, with a little silky pubescence.

Long. 16 mm.

Hab. Limpopo.

This species closely resembles *A. grandis*, ♀, but differs in having the thorax less angular at the sides, rather more narrowed in front. The central channel is rather broader in the middle—*i. e.*, in *grandis* it is nearly straight; in this species it is more elliptical, closely and rather strongly punctured. The sides are closely and strongly punctured, and, although rugose about the middle, the punctures do not make *transverse* rugæ as in *grandis*. In *grandis* there is a small, rather sharply defined fovea on each side of the base. In *Saundersii* there is a larger, deep, punctured impression, which is continued forward and obliquely outwards. The elytra are strongly punctate-striate. The suture and the first and second interstices are subcostate, smooth, the first interstice with an irregular line of fine punctures beyond the middle, the second punctured only at the apex. In *grandis* the apical part of these interstices has a line of very distinct punctures. The rest of the interstices are much broken up by the coarse punctures of the striae, but in *Saundersii* the punctures are not so strongly transverse as in *grandis* and the fourth costa is raised and almost smooth, whereas in *grandis* it is punctured as the others.

Acmæodera sumptuosa, sp. n.

I propose this name for specimens received in Capt. Kerremans' collection—the males as *A. aurolimbata*, Fähr.*, the females as *grandis*, Guér.

It is very like *A. grandis*, but is rather broader and rather more suddenly or obliquely narrowed towards the apex of the elytra.

* Care must be taken not to confound *aurolimbata*, Fähr. (a small insect $7\frac{1}{2}$ mm. long), with *aureolimbata*, Bohem. (15 mm. long). For this latter insect Capt. Kerremans proposed the name *Bohemani* (Mém. Soc. Ent. Belge, i. p. 167), but confounds the two in the Buprestidæ of Wytzman's 'Genera,' p. 30.

♂.—Above dark brown, with faint æneous or cyaneous tint, the margins of the thorax and elytra coppery. Thorax with the median channel narrow elliptical, densely punctured (not coppery). The surface on each side of this channel extremely finely and delicately punctured; all the lateral region coarsely punctured; the punctures crowded together towards the sides, smaller and rounder than in *grandis*. Elytra rather more dilated behind the humeral sinuosity than in *grandis*, the suture and first and second interstices smooth at the base, the first punctured beyond the middle, the punctures crowded but so arranged at the apex that there is a tendency to leave fine carinæ; the second interstice slightly costiform and smooth almost to the apex. The remaining interstices densely punctured, the punctures smaller and closer than in *grandis*, the third and fifth interstices almost obliterated by the punctuation.

♀.—Bright golden green. Thorax with the median channel golden, the smooth surface slightly tinted with cyaneous. Elytra with the suture cyaneous, the colour becoming golden on the disk. The margins bright coppery. The punctuation throughout is rather less dense than in the male.

Long. 14–17 mm.

Hab. “Afrique or. mer.” ♂; “Afrique, S.E.” ♀. “Heyne.”

Acmæodera aureolimbata, Bohem.

Acmæodera Bohemani, Kerr.

The Museum has a specimen of this species from Mr. Saunders' collection marked as compared with type. It is a female.

Acmæodera natalensis, Kerr.

The type of this species is a trifle shorter than the one just mentioned as *aureolimbata*, but I much doubt it being distinct.

Acmæodera Jamesi, sp. n.

Oblong, rather broad, golden green, shining. Elytra with the second interstice broad and nearly flat, almost smooth; the fourth and sixth slightly raised, with a few punctures; the third and fifth closely punctured at the basal half, with a single line of punctures at the apex. Body beneath dark steel-blue.

Long. 13 mm.

Hab. Somali (*F. L. & W. D. James*).

General form of *A. viridiæna*, De Geer, but much less convex. Clypeus very deeply emarginate. Thorax with the central channel not very deep, elliptical, closely punctured. The surface on each side finely punctured; the sides densely and coarsely punctured, but the punctures are smaller and much closer than in *viridiæna*. The basal fovea on each side of the base is deep and sharply defined. The suture is rather flat, smooth, except a few fine punctures at the apex. First interstice flat, with an irregular line of fine punctures; second very broad, nearly flat, with a few fine punctures; third not quite so broad as the second, densely punctured at the base, with transverse zigzag rugæ, the apical half with a single line of punctures; the fourth somewhat raised, especially at the base, smooth, with a few fine punctures; fifth like the third. Apex slightly tinted with blue.

This species is peculiar on account of the sculpture of the elytra.

Acmaødera De Geeri, sp. n.

Our Museum received from Capt. Kerremans' collection two specimens labelled "*ænicollis*, De Geer, Transvaal." These are distinct from a specimen from Mr. Saunders' collection labelled "*ænicollis*, De Geer; compared with type." This latter is the male of *viridiæna*, as I have already mentioned.

The two specimens from Transvaal must therefore be a new species.

It closely resembles *A. viridiæna* in form and general appearance. Head bright coppery; thorax bright coppery red, with the disk dark cyaneous. This dark patch is much narrower than in *viridiæna* and is obliquely narrowed to a point at the anterior margin; it is so finely punctured that at first sight it appears quite smooth; each puncture bears a fine black hair. There is a narrow, punctured, coppery median line. The elytra have the suture and the first and second interstices shining dark cyaneous (extended a little on the third interstice posteriorly), the rest of the elytra bright coppery red. The coppery margin in *viridiæna* is always narrow.

The second specimen has the elytra less brightly coloured, the sutural area being brownish coppery and the sides tinted with coppery.

Long. 12 mm.

Hab. Transvaal.

Acmaeodera tricolor, sp. n.

Bright green, the disk of the thorax and the suture of the elytra violet, the margins of the elytra tinted with golden. ♀.

Long. 12 mm.

Hab. Damara (*Heyne*, ex coll. *Kerremans*).

Somewhat intermediate in form between *A. viridienea* and *A. grandis*. Thorax scarcely broader than the elytra at the base, not much rounded at the sides. Median channel elongate elliptical, the punctures moderately large and moderately close together. The disk tinted with violet, the punctures fine but distinct near the base, strong and moderately close together in front, the punctures becoming crowded together at the sides. Elytra with the suture violet, with a single line of punctures behind the middle. First interstice smooth, with an irregular line of punctures from about the middle; second interstice smooth, gently convex, with a few punctures at its sides near the apex; the remaining interstices in the discal area much interrupted by punctures and zigzag rugæ, but flat and with a single line of rather strong and somewhat closely placed punctures towards the apex. Body black beneath.

Acmaeodera Brooksi, sp. n.

Bluish green, the disk of the thorax and suture of the elytra violet-blue; apex of the elytra carinate. ♀.

Long. 12 mm.

Hab. Buluwayo, Matabele Land (*F. Brooks*).

Size, form, and appearance of *A. viridienea*, but rather more blue-green than that species usually is, and with the entire suture and apex of the elytra violet-blue. It is at once distinguished by the carinæ at the apex of the elytra. Thorax with the median channel elongate-elliptical, closely punctured; the punctures on the disk on each side of the channel are rather fine and slightly separated, but they become gradually less fine and closer towards the sides. The sides closely punctured, the punctures much smaller than in *viridienea* and closer together, but not confused as they are in many species, and there is a small smooth spot towards the anterior angles. Elytra with the suture and the first and second interstices smooth for two thirds their length, then with a line of punctures that become more impressed towards the apex, and the interstices have their margins raised and slightly cariniform. The third and fourth interstices have a line of punctures for their entire length,

their apices similar to the first and second. The sides are rather finely transversely rugulose. Body beneath black.

Acmaödera Yerburyi, sp. n.

Brassy, cylindrical, convex. Elytra on the back with alternate lines of coppery and steel-blue; towards the side a rather broad blue stripe (bordered on each side by a golden line) which turns to the suture near the apex; the margin reddish coppery.

Long. 6 mm.

Hab. Arabia; Lakej and Aden (*Col. Yerbury*).

Very near *A. Foudrasi*, Sol., but smaller, less acuminate, and differently coloured. Thorax brassy, the punctures on the disk very fine and more separated than in *Foudrasi*. Elytra with lines of small punctures on the back, the punctuation rather stronger towards the sides, but less strong throughout than in *Foudrasi*, the striæ deeply impressed at the apex. On the back the colour is in lines, alternately coppery and steel-blue; then there is a rather broad stripe of dark blue which is bordered on each side by golden. The whole margin reddish coppery, but with blue more or less mixed.

Demochroa Bowringii, sp. n.

Form and appearance of *D. gratiosa*, Deyr. Thorax with the sides coppery red. Elytra obscure purple, with a yellow fascia behind the middle; the basal half of the lateral margin and suture at the scutellum narrowly bordered with green; the apex more or less coppery.

Long. 28 mm.

Hab. Cahar (*Bowring*); Sikkim; Himalayas.

Differs from *D. gratiosa* in having the sides of the thorax coppery and the green at the suture of the elytra limited to the extreme base within the first short stria, and in the apex of the elytra being coppery.

Demochroa Meldolana, sp. n.

Form and appearance of *D. gratiosa*, Deyr. Thorax obscure purple, the sides green, with coppery tints. Elytra dark green, with purple shade when viewed obliquely, with a broad yellow fascia behind the middle. The humeral margin, the suture at the extreme base (within the first short costa), and the costæ bright green; the apex broadly tipped with bright green.

Long. 24 mm.

Hab. Andaman Islands (*R. Meldola*).

Differs from *D. gratiosa* in having the elytra dark green and the pale green of the suture restricted to the extreme base, &c. It differs from *D. Bowringii* in being smaller, in the colour of the elytra, and in having the apex bright pale green instead of coppery.

It is worthy of notice that this form is nearer to the Himalayan *D. Bowringii* than to *D. gratiosa* from Penang.

Chrysochroa Fruhstorferi, sp. n.

Form and arrangement of colour as in *C. rugosicollis*, Saund. Head and thorax very dark, obscure purple, the latter slightly cyaneous on the disk, rather closely and strongly punctured, the sides rugose. Elytra very pale yellow, the basal half of the margin, a large somewhat triangular patch before the middle, and the apical third nearly black, the extreme apex tinted with æneous. Sternum purple; abdomen bluish æneous. ♂ ♀.

Long. 42-50 mm.

Hab. Tonkin (*H. Fruhstorfer*).

Specimens of this species were received with the name *rugicollis*, Saund, attached. I think, however, that they are distinct. In addition to the difference in colour it is distinguished by being less elongate, and the thorax shorter and broader. This is particularly noticeable in comparing the males.

Chrysochroa vittata, Fabr.

C. vittata, F., is allied to *C. ocellata*, F., and not to *C. chinensis*, with which it is so often associated in collections.

C. vittata, *ocellata*, *fulgens*, *similis*, and *Ludekingii* form a group having the thorax somewhat constricted in front and the elytra emarginate at the apex.

Chrysochroa unidentata, Fabr.

I think the synonymy of this species, as given by Capt. Kerremans' list in Wytzman's 'Genera,' p. 48, is not quite correct. *C. marginata* and *C. sublineata* should be associated with *C. mutabilis*. The true *C. unidentata* has the thorax dark coppery, with two well-defined green vittæ.

Chrysochroa Thelwalli, sp. n.

Head coppery. Thorax golden green, with a purple

marginal spot which is bordered by reddish coppery. Elytra golden green, with a broad yellow vitta on each, with a narrow dark cyanous line between the yellow and the suture. Abdomen coppery, clothed with ashy pubescence at the sides. ♀.

Long. 26 mm.

Hab. Nyassa (*Thelwall*).

Closely resembles *C. lepida*, Gory, but differs in being of a lighter golden green. The thorax is more finely punctured at the sides.

[To be continued.]

XXXVIII.—*Description of and Reflections upon a new Species of Apodous Amphibian from India.* By A. ALCOCK, M.B., LL.D., F.R.S., Superintendent of the Indian Museum and Professor of Zoology in the Medical College of Bengal.

[Plate VII.]

CONTENTS.

- § 1. The Question of the *Cæciliidæ*.
- § 2. The Distribution of the *Cæciliidæ* compared with that of certain Subtropical Genera of Hermit-crabs.
- § 3. The Distribution of the *Cæciliidæ* explicable on the Theory of a Tethyan Sea.
- § 4. Description of *Herpele Fulleri*, sp. n., from Cachar in the Province of Assam.
- § 5. Table of the *Cæciliidæ*.

§ 1. THE QUESTION OF THE *CÆCILIIDÆ*.

The Apodous Amphibia (*Cæciliidæ*) are of interest, not only to the morphologist, but also on account of their geographical distribution, for since these animals are specially modified for a subterranean life, it is difficult to understand how any of the ordinarily invoked modes of dispersal can have operated upon them.

Up to the year 1895, according to Boulenger (*P. Z. S.* 1895, pp. 401–414), 42 species of *Cæcilians* were known—namely, from tropical America 26, from tropical West Africa (north of the Equator) 4, from East Africa 4, from Seychelles 3, from India and South-east Asia 5.

Since the publication of Mr. Boulenger's paper 2 more species have been described from tropical America and 1 each from West and East Africa; and I have now to place on